

PROTOCOL  
OF THE MEETING OF THE JOINT U.S.-U.S.S.R.  
PROJECT COORDINATORS ON "PLANNING, UTILIZATION  
AND MANAGEMENT OF WATER RESOURCES"

Washington, D. C., USA

October 23, 1974

I

In accordance with the U.S.-U.S.S.R. Agreement on Cooperation in the Field of Science and Technology signed in Moscow, May 24, 1972, and with the Record of the First Meeting of the Joint U.S.-U.S.S.R. Working Group on Scientific and Technical Cooperation in Water Resources, signed September 30, 1972, the meeting of U.S.-U.S.S.R. Coordinators for "Planning, Utilization and Management of Water Resources" was held in Denver, Colorado, October 15-16, 1974.

The U.S.S.R. delegation was headed by A. M. Volynov, Soviet Project Coordinator and Director General, Sojuzvodproject.

The U.S. delegation was headed by Warren D. Fairchild, U.S. Project Coordinator and Director, Water Resources Council.

A list of the participants in the meeting is attached as Appendix 1.

At the meeting, each side presented and discussed the following items:

1. Coordination of the programme of priority cooperative activities for a period of 1974-76 (Appendix 2).
2. Draft plan of visits of U.S. specialists to the U.S.S.R. and Soviet specialists to the USA for 1975 on the priority cooperative activities (Appendix 3).
3. Technical problems of large river runoff transfers.
4. Technical solutions for desalinization of soils and saline water use for irrigation.

**\*DOI Waiver Letter In ERU FILE\***

## II

At the meeting, each side exchanged opinions and information on the activities, undertaken in their countries in the sphere of planning, utilization, and management of water resources being of mutual interest; discussed the form, scope, and the execution time of cooperative activities on separate items under the Project; and agreed on the Programme of priority cooperative activities for a period of 1974-76 (See Appendix 2).

In accordance with the mentioned "Programme," both sides agreed to have in the 4th quarter of 1974 and 1st quarter of 1975, an exchange of methodologies and draft working programs of research on all priority activities with reference to concrete projects or experimental plots.

It is planned that a detailed review of the scope of cooperative activities on separate items of the Project will be made during the forthcoming meetings of specialists and be completed in the 1st half of 1975.

Agreement will be reached on working research program (with reference to concrete projects).

Both sides discussed the Soviet proposals pertaining to the draft plan of visits of U.S. specialists to the U.S.S.R. and Soviet specialists to the USA in 1975 on priority cooperative activities under the Project (Appendix 3) and agreed to consider them as a basis for making up of their delegations in 1975.

Both sides agreed that a preliminary agreement on visits of specialists is to be reached three months prior to the planned departure of specialists. Final agreement will be made one month before the departure of a delegation.

Both sides agreed that materials to be exchanged shall include four (4) copies in sender's language and the final reports prepared by the lead side shall include ten (10) copies in the sender's language.

The sides agreed to reiterate the position that items relating to: (1) ground water and (2) fisheries structures should be assigned to this group.

The sides agreed that within two (2) months the American side shall present the Soviet side a list of organizations fulfilling the work according to the joint programme.

The sides agreed that with respect to use of saline water for irrigation, and irrigation of saline soils, it was observed that there is a potential for duplication of activities under this agreement with those proposed under the Agreement on Cooperation in the Field of Agriculture, dated June 19, 1973. To reduce such duplication, soil science and related agronomic activities will not be considered under this agreement except for such items as water delivery and use, leaching rates, drainage techniques, and prediction of water-salt balance.

At the meeting, both sides made reports on interbasin large river runoff transfers, desalination of soils and saline water use for irrigation. Each side exchanged opinion on the research activities in both U.S.S.R. and USA and on techniques used in projects in their countries to solve the mentioned problems.

The following technical problems were discussed at the meeting, and in particular:

1. Methods of soil conservation in river basins.
2. Methods of desalination in the Lower Colorado Valley.
3. General outline of desalination plant to be constructed on the Lower Colorado River.
4. Math modelling for regulation and prediction of water resources in the Colorado River.
5. Discussion on choice of equipment in pumping plants.
6. Methods of drainage used in the USA.

The U.S.S.R. specialists were acquainted with the activities of several water agencies and firms; scientific research work and technical solutions on large-scale projects; and also visited:

1. Tennessee Valley Authority in Knoxville, Tennessee
2. Soil Conservation Service watershed projects in Oxford, Mississippi
3. Corps of Engineers Waterways Experiment Station at Vicksburg, Mississippi
4. New Orleans port facilities in New Orleans, Louisiana
5. Bureau of Reclamation projects in Yuma, Arizona
6. Metropolitan Water District of Southern California, Joseph Jenson Filtration Plant, and the Edmonston Pumping Plant
7. Bureau of Reclamation Engineering and Research Center at Denver, Colorado

During the visit in the USA, the Soviet side handed over to the U.S. side the summary reports both in Russian and English on the following subjects:

1. Problems of Siberian rivers' partial runoff utilization to improve water availability in the arid zone of the U.S.S.R.
2. Information on the present state of saline land reclamation and use of saline water for irrigation.
3. Methods and assessment of the influence of economic activity on water resources and the hydrologic regime.

In its turn, the American side handed over to the Soviet side:

Status Report - Colorado River Water Quality Improvement Program - U.S. Bureau of Reclamation - January 1974

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L I S T

of the participants of the meeting of the Joint  
U.S.-U.S.S.R. Project Coordinators on "Planning,  
Utilization and Management of Water  
Resources"

Denver, Colorado, USA

October 6-20, 1974

Soviet Side

1. Volynov A.M. Project Coordinator, Director General,  
Sojuzvodproject
2. Guerardi I.A. Deputy Chief Engineer, Sojuzvodproject
3. Kostyakov N.S. Chief of External Relations Department,  
Sojuzvodproject
4. Bobchenko V.I. Chief of Soils and Reclamation  
Laboratory of the All-Union Research  
Institute for Hydraulic Engineering  
and Reclamation (VNIIGiM)
5. Linyuchev V.A. Chief of Hydromechanical Department,  
Hydroproject Institute
6. Anchiforov G.I. Interpreter

United States Side

1. Warren D. Fairchild Project Coordinator and Director,  
Water Resources Council
2. James J. O'Brien Assistant Commissioner - Resources Planning,  
Bureau of Reclamation, U.S. Department of  
the Interior
3. Jack C. Jorgensen Associate Director, Office of Water Research  
and Technology, Department of the Interior
4. Joseph Haas Assistant Deputy Administrator, Soil  
Conservation Service, U.S. Department of  
Agriculture
5. Jack R. Thompson Assistant Chief, Engineering Division,  
Civil Works Directorate Office, Corps of  
Engineers, U.S. Army
6. Thomas D. Maddock Senior Researcher, Geological Survey,  
U.S. Department of the Interior

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"Irrigation Management for Salt Control," by Schilfgaarde, Bernstein, Rhoades, and Rawlins, Journal of the Irrigation and Drainage Division, ASCE, September 1974

Selected papers and Reclamation Instructions on land classification procedures used by the Bureau of Reclamation

Reconnaissance Report on West Texas-Eastern New Mexico Import Project, U.S. Bureau of Reclamation, June 1973

Selected reports and papers on conceptual plans for major interbasin water transfer projects.

It is the position of the Project Coordinators that the scope and timing of realization of priority cooperative items as framed by the Programme may be subject to closer definition in the process of working out of research programs under the condition of mutual agreement between the Coordinators or their designated representatives.

The discussions were held in the business-like manner and atmosphere of mutual understanding and marked the beginning of realization of cooperative activities under the Project.

The present Protocol is signed in English and in Russian (two copies each) on October 23, 1974. Both texts are authentic and equally authoritative.

  
A. Volynov  
U.S.S.R. Project Coordinator

  
Warren D. Fairchild  
USA Project Coordinator

## P R O G R A M M E

of realization of priority cooperative activities under Project I-I  
 "Planning, Utilization and Management of Water Resources"  
 for the period of 1974-1976

Name of items and procedures of work at each subitem	Procedures at each phase of the subitems	Executors		Comple- tion period	Result to be expected and lead side for prepara- tion of report
		in USSR	in USA		
2					
3					
4					
5					
6					
7					
Subitem II. Prospective Planning					
Part II-A. Quantitative and Qualitative appraisal of Changes of Water Resources in River Basins resulting from the Activities of Man	1. Exchange of summarizing information	GGI IGAN SSSR IVP AN SSSR	WRC COE USDI USDA	IV quarter of 1974	Selection of rational methods for assessment of the impact of man's activities on the hydrologic regime USA
- methods used to assess the impact of man's activities (irrigation, drainage, construction of reservoirs, agrotechnical undertakings, etc.) on the hydrological regime and water resources	2. Exchange of resultant data on experimental water and thermal balance investigations on irriga- tion and drainage areas, runoff experimental plots, ravines and small water catchments with different land use practices			II quarter of 1975	
	3. Analysis of technical information and investi- gations data, elabora- tion of preliminary recommendations for formulation of future research programs				

7. Joseph Cutschall (Alternate to Mr. O'Brien)  
Bureau of Reclamation, U.S. Department  
of the Interior
8. Alexis Rodzianko Interpreter, U.S. Department of State

Part IIA-I. Evaluation of runoff shortage and ways of its reduction

- Use of industrial and municipal sewage waters for irrigation (work is to be carried out on concrete projects in both countries)
- study of the chemical composition of different categories of sewage waters
- investigation of methods that will considerably reduce harmful effects of sewage water
- investigation of possibilities for all-year-round use of sewage waters to irrigate feed crops
- sewage water irrigation effects on the yield and quality of feed crops

1. Exchange of scientific and technical information and publications
2. Exchange of main project characteristics and draft research programs
3. Coordination of projects, scope, elaboration of methodology and working programs of investigations on separate subjects
4. Research work on concrete projects and stage-by-stage exchange of results
5. Discussion of the results of cooperative research programs, appraisal of results, elaboration of recommendations
6. Elaboration of a final report

VNISSV  
UkrNISOSV  
COE  
EPA  
USDA  
USDI

IV quarter of 1974  
I quarter of 1975  
II quarter 1975  
1975  
IV quarter 1975  
I quarter of 1976

Utility classification of sewage waters for irrigation. Recommendations on methods and technology that reduce harmful effects of sewage waters, all-year-round sewage water irrigation, standards of irrigation  
USA

Part IIA-4. Methodology for  
evaluation of technical  
and economic efficiency  
of reclamation and multi-  
purpose water development  
projects  
(on concrete projects)

1. Profitability and recoupment of fixed and related capital investments put into reclamation systems and land improvement developments	1. Exchange of scientific and technical information and publications	VNIIGIM SOPS of the Gosplan SSSR MENIL	WRC USDI USDA	IV quarter of 1974	Recommendations for improvement of methods of economic assessment and increase of efficiency of reclamation
2. Economic evaluation of reclamation undertakings with account to their impact on environments and surroundings	2. Exchange of methodologies and main data on selected cooperative research projects			IV quarter of 1974	
3. Economic assessment of a multipurpose water development project	3. Discussion of methodologies accepted in USSR and USA; Choice of two typical water resources development projects in each country and determination of initial data for comparative evaluation of the selected projects			II quarter of 1975	USSR
	4. Exchange of technical and economic data and results of investigations on the selected projects			III quarter of 1975	
	5. Carrying out of comparative calculations based on the methodology accepted in USSR and USA. Exchange of resultant data.			IV quarter of 1975 - - II quarter of 1976	

6. Holding of a scientific and technical seminar to assess the results of investigations and calculations and to work out recommendations.

7. Elaboration of a final report

III  
quarter  
of 1976

IV  
quarter  
of 1976

1	2	3	4	5	6	7
1	Part II-C. Systems approach to working out programs of utilization of water resources within large river basins	Exchange of scientific and technical information  Exchange of draft working research programs  Meeting of Soviet and American specialists in the USSR to determine the volume of initial information, procedures of coordination of methodologies and closer definition of the joint research programs (USSR, the Syr-Daria, USA, the Colorado river basin)	Sojuzvod-project VNIIGiM IVP AN SSSR Gidroproject Sredazgipro- vodka Khlopok	USDI USDA COE EPA TVA	I quarter of 1975 IV quarter of 1974 II quarter of 1975	Elaboration of methodology for water resources planning, including water resources budgets within large river basins; elaboration of algorithms for computers
2.	Formulation of objective for optimal planning of water resources  Development of mathematical models for planning of multi-purpose water resources utilization within the Syr-Daria and Colorado river basins  - long-term planning of water consumption within a basin at each level of water distribution with account to agricultural, industrial, municipal, hydro-energetic and other water uses  - planning of water consumption and water distribution for irrigation and leaching in relation to the sources of irrigation at all levels of water distribution during a year (including vegetative and nonvegetative periods)	1. Exchange of methodologies and knowledge on problems of water resources utilization  2. Joint discussion of methodologies and problems. Coordination of proposed solutions	Sojuzvod-project VNIIGiM Sredazgipro- Khlopok		III quarter of 1975 IV quarter of 1975	

1	2	3	4	5	6	7
1	- elaboration of long-term water resources balances within a river basin					
2		3. Exchange of documents describing machine-made algorithms of solutions				
3		4. Calculating water balance for the Syr-Daria and Colorado river basins using advanced water consumption standards accepted in the USSR and USA for each branch of economy and necessary for conservation of environments.	Sojuzvod-project Sredaz-giprovd-khlopok VNIIGIM IVP AN SSSR		II-III quarters of 1976	
4		5. Joint study of algorithms for computers. Coordination of solutions. Elaboration of a final report	Sojuzvod-project VNIIGIM Sredazgipro-vodkhlopok		IV quarter of 1976	
5			Sojuzvod-project VNIIGIM IVP AN SSSR		December, 1976	

1 2 3 4 5 6 7

Subitem III. Design and construction of water projects

Ways of technical solutions for river basin runoff transfer such as runoff transfer of Siberian rivers and multipurpose water resources development of the North American continent

Part A. Design and construction of big canals

1. Hydraulics of large unlined canals  
Methods for hydraulic calculation and choice of elements of cross sectional and longitudinal profiles of a canal designed for a multipurpose use development project and modeling to determine stability

Exchange of scientific and technical information; holding of a technical seminar in the USA, Hydro-exchange of summaries on project interbasin transfer

Sojuzvodproject VNIIGIM, Hydroproject

USDI COE

III quarter of 1974

Recommendations for utilization of scientific and technical potential of both countries to speed research and project work in the field of multipurpose utilization of water resources and interbasin off redistribution.

1. Exchange of information on hydraulic elements used in both countries and methods of calculation; coordination of joint research work being of mutual interest.

Sojuzvodproject LPI VNIIG

USDI COE

IV quarter of 1974 through I quarter of 1975

Recommendations for hydraulic calculation of big canals with water conveyance capacity of more than 1,000 cu.m/s at hydraulic radius more than 10 m

2. Research work including observation of existing waterways with characteristics close to that of designed canals and investigations on big canals in operation

II quarter of 1975

2 3 4 5 6 7

I  
quarter  
of 1976

3. Joint discussions of the results of investigation, elaboration of recommendations on hydraulic calculations of canals with water discharge of more than 1,000 cu.m/sec with a hydraulic radius of more than 10 m

II  
quarter  
of 1976

4. Exchange of documentation on the results of investigations

III  
quarter  
of 1975

1. Exchange of scientific and technical information and results of investigations

Elaboration of criteria for determination of the natural water course value in terminal and intermediate sectors of a river

I  
quarter  
of 1976

2. Discussion of methodologies used for determination of minimum water discharge in downstreams of water intake structures; elaboration of recommendations

III  
quarter  
of 1976

Elaboration of a final report

2	3	4	5	6	7
3. Organization of construction methods of execution of works on big canals	1. Exchange of the main data of technical solutions	Sojuzvod- project Girpovod-khoz LPI	USDI COE	IV quar. 1974 - IV quar. 1975	Summarizing paper on organization of construction, methods of earth excavating and recommended types of construction machinery in inter basin runoff transfers
	2. Analyze basic data and make preliminary recommendations				USSR
	3. Discussions on methods of doing earth works and organization for construction of big canals			I quarter of 1976	

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3

Part B. Design and Construction of Pumping Stations

Selection of unit capacities of electro-power and mechanical equipment

1. Exchange of scientific and technical information and coordination of project and research materials

Giproved-khoz Hydroproject

USDI COE

I quarter of 1975

concepts to use big pumping stations for pumped storage

- 2.

Study of typical pumping stations in the USA and the USSR. LPI Exchange of technical data and opinions to determine the state of the art in each country. Comparison of main characteristics of big pumps made in both countries;

IV quarter 1974 thru III quarter 1975

discussion of practical possibilities to further increase their capacities

economic assessment of specific speed, capital and operation costs, efficiency coefficient

- standard specifications for manufacture of large pumps, reversible turbines and penstocks

- determination of efficiency by increasing the unit capacity of pumps and pump lift from a single unit

3. Analysis of materials, exchange of opinions, elaboration of recommendations

4. Writing of a summary report

I quarter of 1976

II quarter of 1976

Recommendations on selection of unit capacities of electropower and hydro-mechanical equipment of pumping and pump storage stations

USA

Subitem IV. Management of water and related land resources within basins and regions

1. Exchange of scientific and technical information

IV quarter of 1974

USDA  
USDI  
COE  
WRC

2. Exchange of draft working research programs

I quarter of 1975

3. Meeting of Soviet and American specialists in the USSR to determine the scope of initial information, procedure to coordinate methodologies and closer definition of research programs

II quarter of 1975

2	3	4	5	6	7
Part IV-A. Rational use and water consumption standards for industry, irrigation, agriculture, thermal electric stations and municipal requirements	1. Exchange of materials describing standards and methods 2. Familiarization with research works. Discussion of methods for establishment of sound water consumption and water distribution standards for different branches of economy. Preparation of recommendations	VODGEO Giprovod-khoz VNIIGiM TEP ANH RSFSR CNIKIIVR MENIL	WRC USDA USDI COE EPA	I quarter 1975 II quarter of 1975 - IV quarter of 1975	Principles of water distribution between water consuming branches of national economy and recommendations on advanced water consumption standards are to be determined USA
Part IV-E. Outlining of technical schemes for water resources management within a river basin (USSR, the Syr-Daria River and USA, Colorado River Basin)	1. Exchange of methodological literature 2. Elaboration of technical solutions with account to projects 3. Joint study of technical schemes presented by both sides for consideration	Sejuzvod-project VNIIGiM Sredaz-gipro-vodkhoz	USDI WRC COE USDA	I quarter 1976 II quarter 1975 IV quarter 1975	List of data, necessary control water resources and water structures within river basin is to be established USSR
data requirements for determining the characteristics of a river basin water management program				I quarter 1976	

2	3	4	5	6	7
- determination of functional and organizational structures for water resources management within a river basin	4. Presentation of a final report			II quarter 1976	
Part IV-G. Application of mathematical models for operation and management of water within a river basin (such as the Syr-Daria project in USSR and Colorado in USA)	1. Exchange of materials on methodologies for proposed solutions of operational planning and management of water distribution	Sojuzvod- project VNIIGIM Sredazgipro- vodkhopok TVA	USDI USDA COE	II quarter 1975	Formulation of coordinated methodology and elaboration of algorithms for computers  USA
	2. Coordination of proposed solutions			IV quarter 1975	
	3. Exchange of technical documentation describing algorithms of proposed solutions			I quarter 1976	
formulation of operational water resources budgets within a river basin	4. Joint study of algorithms, selection of variants			III quarter 1976	
	5. Elaboration of a report			IV quarter 1976	

Subtopic V. Irrigation  
Water Quality Problem

Part A  
Effective use of  
Saline Irrigated Lands

1. Exchange of technical information and publications

2. Exchange of draft research programs for concrete projects (experiment plots)

3. Level of scientific research carried out in each country to be discussed both in USA and in USSR.  
Coordination of experiment plots, scope, methods, and research progress.

4. Carrying out of research work; stage by stage exchange of results.

5. Meetings of Soviet and American specialists to evaluate the results of research work and work out recommendations

6. Elaboration of a summary report on the subject

VNIIGIM  
SANIIRI  
AzNIIGIM  
S-redazgipro-  
vedkhopok

USDI  
USDA

IV  
quarter  
of 1974

I quarter  
of 1975

Recommendations on irrigation water quality, new principles of design and effective use of irrigation systems on saline and salt affected lands, comparison of irrigation regimes and economy of water on such lands with account to different degrees of their salinization leaching techniques

USSR

II  
quarter  
of 1975 -  
IV  
quarter  
of 1976

II-III  
quarter  
of 1976

IV quarter  
of 1976

1	2	3	4	5	6	7
1.	Leaching techniques used under different soil and reclamation conditions including heavy saline soils. Methods for development of leached and saline soils during reclamation period	1. Exchange of results of investigations 2. Experiments on heavy saline and alkali soils (experiment plots)	VNIIGIM SANIIRI AzNIIGIM	USDI USDA	III quarter of 1975 II quarter of 1975 - IV quarter of 1976	Recommendations on leaching techniques and new methods of desalinization of soils, utilization of irrigated lands during the reclamation period, including saline lands
2.	Design and control of regimes on irrigation and drainage systems on originally saline lands Criteria for selection and feasibility of reclamation regimes of irrigated lands and types of drainage	1. Coordination of methodology of modeling and cooperative research work, selection of typical irrigation systems, where prediction and design methods are to be compared 2. Comparison of Soviet and American prediction and design methods	Sojuzvod-project Sredazgipro-vodkhllopok VNIIGIM SANIIRI	USDA USDI	II quarter of 1975	IVth quarter of 1976. Recommendations on design and effective use of irrigation systems on originally saline lands
3.	Improvement of methods to predict a water-salt balance and reclamation condition of irrigated saline lands				III-IV quarters of 1975	1st quarter of 1978 - Instructions on design techniques for projects on saline lands, including prognosis methods of reclaimed state of irrigated soils using computer programs

USSR

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3. Carrying out of experiment works (selection of materials, modeling, forecasting, comparison and analysis of results, elaboration of computer-made programs)

III  
quarter  
of 1975-  
IV  
quarter  
of 1977

Part B. Saline water  
effective use

1. Exchange of technical  
information and  
publications

USDI  
USDA

VNIIGiM  
SANIIRI  
AzNIIGiM  
Institute  
of desert  
of the AN  
USSR

Recommendations on saline  
water use and sea water  
use for irrigation of  
agricultural crops and  
leaching of saline soil

IV  
quarter  
1974

2. Exchange of methodologies and draft  
research programs for  
concrete projects  
(experiment plots)

I  
quarter  
1975

USA

saline water quality  
criteria and its utilization for irrigation  
and leaching of saline  
soils under different  
soil and reclamation  
conditions

3. Discussion in the USA  
and USSR the state of  
research on the matter  
in each country.

IV  
quarter  
of 1974 -  
II quarter  
of 1975

Coordination of experiment  
plots, scope, methodology  
and research programs

irrigation regimes of  
agricultural crops using  
waters with high salt  
content and sea water

4. Experiment research work  
and stage by stage exchange  
of results (in USSR experiment  
plots are: Central  
Asia - by drainage waters,  
the Caspian Sea coast -  
Sea waters)  
(in USA - Lower Colorado Region)

II  
quarter  
of 1975 -  
IV  
quarter  
of 1976

7

6

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4

3

II-III  
quarter  
of 1976

USA

IV  
quarter  
of 1976

5. Meetings of Soviet and  
American specialists  
to assess the results  
of investigations and  
work out preliminary  
recommendations

6. Elaboration of a final  
report

2	3	4	5	6	7
Subitem VI. Erosion and sedimentation problem in river basins, river beds and canals					
Methods used to predict general erosion.					
- prediction of zones with scouring and nonscouring velocities of slope flow, erosion rate and quantity of washed off soils					
- prediction methods in relation to the quantity of sedimentation in water bodies					
2. Methods of investigation of channel (river bed) erosion, techniques used to measure bed and suspended sedimentations in big canals and rivers under controlled and natural flow hydrological conditions					
- methods used to determine bed and suspended sediments discharge					
- methods of modeling and calculation of big canals and river channels in laboratories					
1. Exchange of information and technical publications	Exchange of information and technical publications	GruzNIIGIM GGI MIIT SANIIRI IVP AN SSSR UkrNIIGIM Yuzh- NIIGIM	USDA USDI COE TVA	I quarter 1975 II quarter 1976	Recommendation on use of experience achieved by each country; implementation of this experience in practice, erosion control measures
2. Coordination of concrete research cooperative activities. Determination of the scope of design, research and other materials to be exchanged between both sides.	Coordination of concrete research cooperative activities. Determination of the scope of design, research and other materials to be exchanged between both sides.				USSR
3. Exchange of methodologies and results of investigations, project studies, technical documentation on measuring devices and information process devices. Also data on construction of protection control works.	Exchange of methodologies and results of investigations, project studies, technical documentation on measuring devices and information process devices. Also data on construction of protection control works.			IV 1975 thru II quarter 1976	
4. Elaboration of a final report	Elaboration of a final report			III quarter of 1976	USSR

1 2

- methods used to calculate deformation of canals, river and reservoir banks

3. Control of channel processes

- investigations on protection of banks, canals and reservoirs against wave-action
- research, design and construction of protection and control structures on rivers having unstable channels

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# Appendix 3

## Draft Plan

of visits of U.S. specialists to the U.S.S.R. and Soviet specialists to the USA for 1975 on the priority cooperative activities under Project I-I "Planning, utilization and management of water resources"

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os.:	Description	Objective of a visit	Country and time of visit	Number of specialists	Duration of a visit
1	2	3	4	5	6
	Subitem II. Prospective planning. Parts II-A; IIA-I; II-A-4; IIC.	1. Coordination of projects that are subjects to research work. Determination of the scope and volume of initial data for carrying out cooperative investigations. Discussion and coordination of methodologies and working research programs	USSR April 1975	8	18 days
	Subitem IV. Management of water and related land resources. Parts IV-A; IV-E; IV-G	2. Discussion of the results of investigations on parts II-A; IIA-1; IIA-4 and IV-A. Review of various technical organization schemes for management of water resources within a river basin. Discussion of methodologies for short-term and long-term water use and water distribution management; coordination of various technical solutions. Discussion of future works under the Project.	USA November 1975	8	18 days

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18 days

18 days

Subitem III. Design and construction of water projects. Parts IIIA and IIIB

1. Coordination of projects and programs of cooperative investigations on hydraulic characteristics of big canals. Study of technical solutions for big pumping stations in the USSR, coordination of the scope of project and research materials subject to an exchange between both sides. Discussion of earth works procedures, organization of construction of big canals taking into account the basic criteria of the feasibility considerations for Siberian rivers runoff transfers; elaboration of recommendations

USSR  
May 1975

USA  
October 1975

2. Discussion of the results of investigations and elaboration of recommendations on hydraulic calculations of big canals. Discussion of methods to determine minimum water discharge in downstreams of water intake structures; elaboration of recommendations.

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Exchange of opinions on the results of investigations; discussion of recommendations on the choice of unit capacity for electric power and hydro-mechanical equipment of pumping and storage pumping stations. Discussion of future research programs under Subitem III.

15 days

5

USA

April 1975

1. Study and discussion of these activities in both countries on separate parts of the Subitem. Coordination of concrete cooperative project and research works. Determination and definition of the scope of project and research materials that will be exchanged between both sides. Coordination of methodologies and working research programs

15 days

5

USSR

May 1975

Subitem V. Irrigation water quality problem.  
Parts A and B

## RECORD OF DISCUSSIONS

At the Second Session of the US-USSR Working Group on Cooperation in the Field of Water Resources, October 16-23, 1974, in the United States of America.

## I

In accordance with the US-USSR Agreement of Cooperation in the Field of Science and Technology signed in Moscow on May 24, 1972, and the Record of Discussions at the First Session of the US-USSR Joint Working Group of September 30, 1972, the Second Session of the US-USSR Joint Working Group on Cooperation in the Field of Water Resources was held in the United States from October 16-23, 1974.

The USSR delegation was headed by I. I. Borodavchenko, Deputy Minister, USSR Ministry for Reclamation and Water Management. The U.S. delegation was headed by William S. Butcher, Professor of Water Resources Engineering, the University of Texas at Austin, Texas.

The list of participants in the Session is attached in Appendix No. 1.

The points discussed at the Session were:

1. The results and progress achieved in implementation of the work planned for each project since the First Session of the Working Group in September 1972.

2. Approval of program of work for the period of 1975 - 1976 and longer range.

- ### 3. Tentative programs of exchange of delegations during 1974 - 1975.

## II

1. In the course of the discussions of the Working Group, both sides exchanged information on the results achieved in implementation of the work for each project.

Both sides expressed their satisfaction that cooperation on the projects has been conducted in conformity with the plan approved at the First Session of the Working Group in September 1972.

The results of work conducted in each project within the period of 1973 - 1974 are briefly given in Appendix No. 2.

12/25/12  
 12/26/12  
 12/27/12  
 12/28/12  
 12/29/12  
 12/30/12  
 12/31/12

2. The delegations considered and approved the programs of cooperation for the following projects:

- Planning, utilization, and management of water resources (project I-1).
- Plastics in hydrotechnical construction (project II-3).
- Methods and means of automation and remote control in irrigation systems (project III-2).
- Cold weather construction techniques (project II-2).

The detailed work programs for each project are given in Appendix No. 3.

3. The delegations agreed that the detailed programs of visits of the U.S. and Soviet specialists should be submitted and finalized by the sides not later than 2 months prior to the starting date of a visit.

4. In the course of discussions both sides approved the desire of the coordinators of projects I-1 at the Session held in Moscow from May 11-25, 1974, to consider the following points within the framework of this project: "ground water" and "fish protection installations."

To avoid duplication with other working groups, ground water will be considered during the preparation of the water balances and fish protection and fishway installations as part of hydraulic structures only.

5. Any problems that may arise in the process of cooperation will be decided through communication between the representatives of both parts of the Working Group, their authorized officials or at the next session of the Working Group.

6. The Third Session of the US-USSR Joint Working Group on cooperation in the field of water resources is planned to be held in the USSR, possibly during the second half of 1975.

### III

Both sides express their satisfaction that the Second Session of the US-USSR Joint Working Group in the field of water resources continued the atmosphere of friendship and mutual understanding, thus contributing to further development and strengthening of cooperation between the two sides.

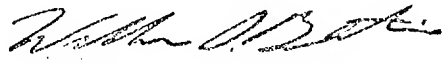
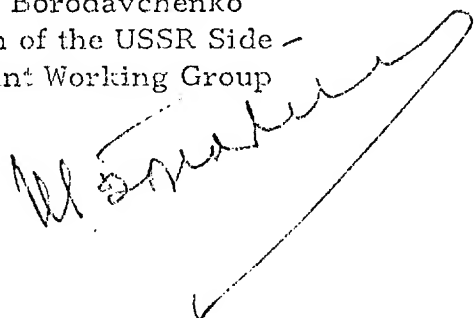
During the stay of the Soviet delegation in the U.S. from October 16 to 23, 1974, it had an opportunity to get acquainted with the work of a number of

scientific research centers and laboratories:

- Automation of irrigation laboratories, and reclamation of sandy soils in the area of Lincoln and North Platte at the University of Nebraska.
- Water and sewage treatment facilities, Omaha, Nebraska.
- Colorado Big Thompson project tour.
- Bureau of Reclamation E & R Center, laboratory of reinforced concrete, temperature variations in reservoirs, and computer facility.

This Record of Discussions was signed in Washington on October 23, 1974, in two copies, English and Russian, both copies being equally valid.

I. Borodavchenko  
Chairman of the USSR Side -  
of the Joint Working Group



William S. Butcher  
Chairman of the U.S. Side  
of the Joint Working Group

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LIST OF PARTICIPANTS AT THE SECOND SESSION  
OF THE US-USSR JOINT WORKING GROUP ON  
COOPERATION IN THE FIELD OF WATER  
RESOURCES

USSR Group:

- I. I. Borodavchenko - Deputy Minister, Ministry for Reclamation  
and Water Management.  
Chairman of the delegation.
- N. R. Khamrayev - Chief, Middle Asian Department on Irrigation  
and Construction of State Farms  
(Glavsredasirsovhovstroi); member of the  
Working Group.
- A. M. Volynov - Director General, V/O "Sojuzvodproject",  
Coordinator of project I-I, member of the  
Working Group.
- H. T. Peterson - Counsellor on Reclamation and Water  
Management, the USSR Embassy in the USA,  
Washington

US Group:

- William S. Butcher - Professor of Water Resources Engineering,  
The University of Texas at Austin, Austin, Texas,

## BRIEF INFORMATION

### on the results of activities of the Working Group on Water Resources

As of October 23, 1974, the following has been done under individual projects of cooperation.

#### Project No. 1. Planning and Development of Measures for Rational Use of Water Resources.

The coordinators determined a preliminary list of topics and a general program of cooperation.

In May 1974, at the first meeting of coordinators of the Soviet and American sides, the joint program of scientific and technical cooperation was finalized and priorities set within the project framework for the next two years. An exchange of scientific and technical information was carried out during this period in all topics.

While visiting the USSR, the US delegation were given every opportunity to get acquainted with planning and research organizations and see water management projects (Kakhovka Irrigation System, North-Crimean Canal Project, the Hungry Steppe, Karshi Irrigation Construction Project) and were familiarized with the work of the All Union Organization SOJUZVODPROJECT specifically in the area of economic evaluation of H<sub>2</sub>O resource programs.

A return visit of USSR experts to the United States took place during October 6 - 20, 1974. A specific program of priority projects for 1974 - 1976 was discussed, along with a number of technical points related to problems of large-scale flow transfer, land desalinization and the use of mineralized water for irrigation.

The following reports were delivered by the USSR experts:

- The Problems of Utilization of Part of the Siberian River Flow Aimed at Improving Water Supply Conditions of Arid Areas of the Soviet Union.

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Warren D. Fairchild	-	Director, Water Resources Council, Washington, D. C.
Edwin F. Sullivan	-	Assistant Commissioner - Resource Management, Bureau of Reclamation, Washington, D. C.
Gunner N. Thorsky	-	Chief, Division of Engineering Support, Bureau of Reclamation, Denver, Colorado
Homer B. Willis	-	Chief, Engineering Division, Civil Works Directorate, Chief of Engineers, U. S. Army Corps of Engineers, Washington, D. C.

- Reclamation of Saline Lands in the USSR and the Use of Mineralized Water for Irrigation (state-of-the-art report).
- Methods and Evaluation of Human Activity on Water Resources and Hydrological Regime.

Besides, the USSR delegation handed over to American colleagues technical literature, monographs and publications.

The Soviet experts will visit some research organizations and water management projects.

As a result of joint studies under this Project, experience of the two countries will be synthesized and recommendations worked out concerning a wide range of questions related to designing and construction of water management projects, planning and rational use of water resources.

#### Project II-3. Plastics in Hydrotechnical Construction.

The first meeting of coordinators of the USSR and US sides took place in July 1974 in the USA.

The meeting was predated by exchanges of information and opinions on projects of cooperation (pamphlets, magazines, articles, state-of-the-art reports).

While on a visit to the USA, the Soviet delegation had an opportunity to get familiar with a number of water management projects and companies producing plastic articles (polymer films for seepage control membranes, polymer materials for soil stabilization, plastic pipes and fittings used in the construction of drainage and irrigation works), research projects in the field of interest.

At the final meeting held in Denver Engineering and Research Center, both sides tentatively agreed upon the specific program of joint research projects. The program envisages planning of construction through joint efforts of experimental projects in both countries, using films and plastic pipes of Soviet and American manufacture as well as carrying out applied research projects in the field of polymer materials used in repairs.

During the return visit of US experts to the USSR (September 12-29, 1974), the program was further improved on and finalized.

Considering that implementation of base items of the joint program is time-consuming, the program has been extended through 1980.

While in the USSR, American experts were familiarized with the work of some research and planning institutes, technical approaches and construction practices employed in the USSR (visits to Kakhovka Main Canal Construction Project, Headwork of North-Crimean Canal).

Project III-2. Methods and Means of Automation and Remote Control of Water Resource Systems.

Cooperation under this Project has proceeded as follows:

Contacts were established between the coordinators. The coordinators exchanged opinions on possible trends of cooperation, information on achievements of the two sides in the area as well as technical literature.

Both sides exchanged delegations of experts headed by coordinators, as agreed.

The delegation of Soviet experts visited the USA in June 16-28, 1974. The US delegation visited the USSR during September 14-21, 1974. In the course of the trips, the delegations got acquainted with the management of activities under the Project, with a number of water management projects and systems, with organizations in charge of project operations.

The USSR delegation visited a pilot section of the automated pipeline irrigation system in the State of Nebraska, an experimental station of the Nebraska State University, water development district Westland, the California aqueduct, Salt-River Project, irrigation area in Palo Verde Engineering and Research Center of the Bureau of Reclamation, Denver.

When in the USSR, the US delegation visited the All-Union Association for Planning Water Management Projects V/O SOJUZVODPROJECT, Moscow, SANIIRI Institute, Tashkent; the All-Union Institute of Integrated Automation of Water Resource Systems, Frunze; water management projects in Uzbek SSR (Grand Ferghana Canal, Grand Andizhan Canal, Southern Hungry Steppe Canal); water management projects in Kirghiz SST (At-Bashinsky Canal, Al-Amedinsky Canal).

A general program of scientific and technical cooperation under the Project for the period 1973-1980 and a more detailed program for the period 1975-1976 were drawn up and agreed upon at the meeting.

The results of the meeting are contained in the Records of Discussions.

Project II-2. Cold Weather Construction Techniques:

During the period 24 September - 9 October 1974 a six-member delegation from USA visited the Soviet Union to study potential areas for cooperative interchange and to discuss arrangements for such interchange. The USA delegation was composed of representatives of the Bureau of Reclamation, Department of the Interior and of the Corps of Engineers, U. S. Army.

The Soviet delegation on this subject was drawn from representatives of the Ministry of Power and Electrification, the "Hydroproject" Institute and the B. E. Vedenev All-Union Research Institute of Hydraulic Engineering at Leningrad.

The USA delegation was given opportunity to visit and inspect the Scientific Research Center of "Hydroproject" Institute in Moscow and the All-Union Research Institute of Hydraulic Research at Leningrad. The delegation also visited four hydropower projects in central Siberia, the Irkutsk, Bratsk and Ust Ilimsk projects on the Angara River and the Viliuy Hydroelectric Station at Chernyshevsky in the permafrost region of Siberia. Major construction activities were observed at the Ust Ilimsk and Viliuy projects and at an extremely large wood products manufacturing plant in Bratsk. At all the sites visited the delegation received technical briefings and was given extensive opportunities for discussions with the Soviet engineering staffs. At Chernyshevsky briefing and discussions were held at the branch of the Permafrost Institute, USSR Academy of Sciences. The USA delegation also was given a number of excellent opportunities to learn of the history and culture of the Soviet peoples.

In a protocol signed by the heads of the USA and USSR delegations in Moscow on 8 October 1974 it was agreed that future forms of cooperation in the area of cold weather construction techniques would include:

- a. Mutual interchange of scientific and technical literature and information.
- b. Sponsorship of joint Seminars and Symposiums.
- c. Exchange of delegations of specialists for consultation and exchange of experience in cold weather construction.

Nine main topics or themes were identified in which there are mutual interests in developing cooperative interchange related to cold weather construction with special emphasis on construction for water resource development.

Details of the exchange program will be further defined during a return visit of the USSR delegation to the USA planned for the early part of 1975. Definite plans were made for participation by Soviet experts in an International Symposium on Ice Engineering Problems to be held in August 1975 at the U. S. Army Cold Regions Research and Engineering Laboratory at Hanover, New Hampshire.

Appendix 3

Record of Discussions of Project Groups

- A. I-1 -- Planning, utilization, and management of water resources,  
5/25/74, 10/23/74
- B. II-3 -- Plastics in hydrotechnical construction, 9/28/74
- C. III-2 -- Methods and means of automation and remote control, 9/24/74
- D. II-2 -- Cold weather construction techniques, 10/8/74

US-USSR JOINT WORKING GROUP ON WATER RESOURCES

*Ignore!*  
**SECRET**

Study Tour for Soviet Members

Itinerary - Wednesday, October 16 to Wednesday, October 23

Traveling group: Mr. I. I. Borodavchenko <sup>Deputy Minister, USSR Ministry for Land Reclamation & Water Management</sup> (USSR Chairman of Working Group)  
Mr. Peter Budzilovich (State Department Interpretator)  
Mr. H. Khamrayev (USSR Member of the Working Group)  
Dr. William S. Butcher (US Chairman of the Working Group)

Wednesday, October 16

9:50 p.m. Depart New York for Chicago, Illinois via United Airlines Flight 119. Arrive 11:00 p.m. Stay overnight near airport.

Thursday, October 17

7:15 a.m. Depart Chicago for Omaha, Nebraska via United Airlines Flight 775. Arrive 8:27 a.m. Rental car at airport. Visit Water Purification Facilities of M.W.D. Omaha (Mr. Robert Bell). 2 p.m. visit Mead Field Laboratory, University of Nebraska. (Mr. Paul Fischbach) to inspect On-Farm Automated Pipe System and Central Pivot Sprinkler. Stay overnight in Lincoln, Nebraska at Northeast Holiday Inn.

Friday, October 18

9:08 a.m. Depart Lincoln, Nebraska for North Platte, Nebraska via Frontier Airlines Flight 561. Arrive 10:21 a.m. Rental car at airport. Drive to Gothenburg, Nebraska. Visit Central Nebraska Power Company's Tri-County Office to inspect computer control of canal operation (Mr. Deimeyer) Afternoon: Drive to North Platte Station of University of Nebraska, to inspect Automatic Solid Set Sprinkler System and Central Pivot Sprinkler System. Stay overnight at Holiday Inn, North Platte.

*WORTHEN  
MARLYS*

Saturday, October 19

a.m. Inspect Sand Hills Agricultural Laboratory of the University of Nebraska (with meeting of Nebraska Section of American Society of Agricultural Engineers). 5:15 p.m. Depart North Platte, Nebraska for Denver, Colorado, via Frontier Airlines Flight 567. Arrive 5:56 p.m. Rental car at airport. Stay overnight in Denver, Colorado at Kilpin Motel.

Sunday, October 20

Visits to Colorado, Big Thompson Project, etc., to be arranged by Bureau of Reclamation in Denver, Colorado. Stay overnight in Denver.

Monday, October 21

Visit Bureau of Reclamation Laboratories.

3:50 p.m. Depart Denver for Washington, D. C. (Dulles Airport) via T.W.A. Flight 202. Arrive 9:00. Rental car at airport. Stay overnight in Washington, D. C.

*Water Resources*

Tuesday, October 22

a.m. Free time or visit to Blue Plains Waste Treatment Plant if requested.  
1:30 p.m. Meeting of US-USSR Joint Working Group on Water Resources  
at Water Resources Council, Suite 800, 2120 L Street NW, Washington, D.C.  
Stay overnight in Washington, D. C. at Park Central Hotel or Washington  
Hilton Hotel.

Wednesday, October 23

9:00 a.m. Continuation of meeting of Joint Working Group as required.

(Thursday, October 24  
(Friday, October 25

Meeting of Joint Commission on Science)  
and Technology)